

Boreholes will be advanced from the ground or asphalt surface either to a depth of 0.31 to 0.62 m (1 to 2 feet) below the top of bedrock or 0.31 to 0.62 m (1 to 2 feet) below the vertical extent of VOC contamination (based on field instruments), whichever is greater. Samples will be collected at 1.22 m (4 ft) intervals below ground surface, or at intervals where VOCs are detected with field instrumentation. The VOC sample will be collected from approximately the lower 15 cm (6 in) interval and the radiological sample will be collected from the 15 cm (6 in) interval above the VOC sample. Samples for radiological screening will be collected as a composite sample from the radiological sample consisting of approximately 60 grams of soil into approximately one half of the 125 ml wide mouth sample jar. Because of the different ionization potential between PCE and CCl₄, two photoionization detectors will be used (10.4 and a 11.7 eV bulb). If VOCs are detected above 10 % of the RFCA Tier I action levels, then the sampling grid will be extended an additional 6.1 m (20 ft) in an upgradient direction of that location, and additional samples will be collected for laboratory analysis.

If DNAPL is encountered, the follow-up boring step-out distance will be reduced to 3 m (10 ft). If DNAPL is suspected, an attempt to collect a liquid sample from the core barrel will be made and the borehole will proceed no more than approximately 0.61 m (2 ft) into bedrock. This process will continue until the area of contamination is defined. Follow-up borehole locations will be relocated in the field based on analytical results (i.e. if areas of VOC contamination are observed as compared to the RFCA Tier I action levels, additional borehole locations for soil sampling may be required to further delineate the extent of contamination).

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A surface area with little or no vegetation and FIDLER readings greater than 10,000 cpm was identified 30 feet east of well 6591, adjacent to the west side of the 903 Pad. One of the west VOC and shallow radiological boreholes will be relocated to the west to evaluate this area. The radiological sampling methodology described above for the Lip Area radiological subsurface investigation and the VOC sampling methodology, as described above, will be followed for this borehole.

3.3 *Sample/Data Collection and Handling*

Prior to implementation of the field program, Environmental Approval Process for Construction/Excavation Activities (1-F20-ER-EMR-EM.001) will be completed. Information

collected in the field will be recorded in the field logbook per ADM.05.14, Use of Field Logbooks and Forms and FO.14, Field Data Management.

3.3.1 Sample and Data Collection

Surface Soils - HPGe measurements will be made at each survey location in accordance with Radiological Engineering Procedures. FIDLER surveys will be conducted in accordance with ROI Manual, 4-H58-ROI-06.6, Use of Bicron FIDLER. Surface soil samples will be collected

utilizing the RF method, as modified by this SAP (Section 3.1.1), identified in GT.08, Surface Soil Sampling.

Subsurface Soils - The vertical extent of contamination shall be investigated through the completion of boreholes. Borehole locations shall be cleared according to GT.10, Borehole Clearing. Boreholes will be completed by procedure GT.02, Drilling and Sampling Using Hollow-Stem Auger Techniques, or by GT.39, Push Subsurface Soil Sample. If hollow-stem auger techniques are selected, soil samples will be collected utilizing either continuous core auger sampling or continuous drive sampling, depending on which method provides the best percentage of core recovery. Soil cores will be screened with field instruments per FO.15, Photoionization Detectors and Flame Ionization Detectors. Boreholes will be logged according to procedure GT.01, Logging Alluvial and Bedrock Material. Boreholes will be abandoned by procedure GT.05, Plugging and Abandonment of Boreholes, except that geoprobe boreholes will be backfilled with powdered or granular bentonite from ground surface and not tremmied. Boring locations will be identified with their unique location number assigned and surveyed for location and elevation using GPS receivers or equivalent equipment.

3.3.2 Sample Handling

The location and depth interval of surface or subsurface media, either soil or water, recovered during the course of this investigation will be recorded in the field log book. RFEDS location codes will be cross indexed to appropriate sample location designations in the field logbook. Soil core and other material that is subject to only field screening will be identified by the sample location code and depth interval where the sample is obtained. Samples undergoing VOC or radioisotope analysis will have Kaiser Hill-Analytical Services Division (KH-ASD) sample numbers applied to the container labels in the field. The numbers will be applied sequentially as the samples are collected and the COC form is prepared. A block of location codes will be of sufficient size to include the entire number of possible locations scheduled and an additional twenty percent for potential additional locations. Data record storage will be performed by KH-ASD. Sample collection and handling will follow procedure 5-21000-OPS-FO.13, Containerization, Preserving, Handling, and Shipping Soil and Water Samples. Samples will be transported to laboratories accordance with FO.25, Shipment of Radioactive Materials Samples.

| Soil samples with greater than 10,000 cpm on the FIDLER are suspected to be characterized as

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Final Sampling and Analysis Plan
for the Characterization of the
903 Drum Storage Area,
903 Lip Area, and Americium Zone

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US Department of Transportation radioactive material. Approximately 2 grams of soil sample will be collected for isotopic analysis and placed into pre-weighed sample container. The sample container containing the soil will be weighed to confirm approximately 2 grams of soil in the sample container. A FIDLER reading of the soil sample in the sample container will be recorded in the field logbook to confirm the radiological screen and isotopic results.